Space Weather Forecast

Issued on Sunday, 20 August 2023 at 13:18 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Moderate class flares (R1-R2; Minor-Moderate radio blackouts) throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is low, with the peak flare a mid-ranking Common-class event at 20/0626 UTC from a small sunspot in the northwest. Background X-ray flux otherwise remains subdued. There are eight sunspot regions on the facing side of the Sun. Little overall change in the sunspots which were generally magnetically simple and stable. A few Coronal Mass Ejections (CMEs) were visible in the past 24 hours. No Earth-directed CMEs feature in the forecast.

Solar Wind / Geomagnetic Activity: The solar wind at Earth started at slightly elevated levels around 430 km/s and steadily became enhanced through the period to reach elevated to strong levels by the end of the period with a peak of 690 km/s noted at 20/1200 UTC. The number of particles in the solar wind was at mostly average levels. The associated magnetic field was mostly weak with some incursions to moderate levels. The important north-south component was at weak levels with a brief peak to moderate levels at 20/0805 UTC. The net result of the above solar wind measures was for geomagnetic activity to be at quiet to unsettled levels.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity is most likely to remain low, perhaps showing an uptick with the arrival of far-sided groups (that were very active as they left the Earth-facing side) into the new UTC week.

Solar Wind / Geomagnetic Activity: Solar winds are most likely to decline over coming days to slightly elevated by day 3 (22 August) and perhaps occasionally to Low levels thereafter. No further fast winds are anticipated this period and no Earth-directed CMEs feature in the forecast. Geomagnetic activity is forecast to be mostly Quiet throughout, but for the next 24 hours an unsettled or active interval remains possible.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	30	30	30
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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